Nanomaterials buyers beware

Corporate nanotechnology researchers frequently purchase nanomaterials – nanoscale structures in pure form, like carbon nanotubes, fullerenes, and quantum dots – which are the basic building blocks of nanotechnology. But these buyers frequently fail to get what they pay for, according to a new report from Lux Research entitled "Nanomaterials: Buyer Beware."

"More than 200 companies worldwide sell nanomaterials today. As a group, they have a frighteningly poor track record," said Matthew Nordan, Vice President of Research at Lux Research. "In our interviews with nanomaterials buyers, we've heard horror story after horror story from companies that haven't gotten the nanomaterials they expected from suppliers. Nanotubes, metal oxide nanoparticles, and fullerenes generate the most complaints while nanoporous materials and dendrimers generate the least."

Among the experiences that Lux Research documents in its report:

• An electronics company bought samples of carbon nanotubes from multiple vendors and found that up to 30% of what was shipped was actually leftover catalyst used to grow the nanotubes – not the nanotubes themselves.

• A specialty chemicals company purchased samples of carbon nanotubes and found that in at least one case, the sample provided by the vendor included no nanotubes at all – just amorphous carbon soot.

•One widely regarded nanomaterials supplier considered to be a pivotal player in its segment cannot actually supply product in commercial quantities, and secretly resells product from its own competitors when asked to do so.

•One buyer of metal-oxide nanoparticles found many vendors eagerly claimed they could synthesize particles of the buyer's desired size dimension. But none could package or ship them in a way such that they didn't agglomerate into bigger particles, rendering them useless for the buyer's application.

Lux Research projects that nanomaterials supply won't improve quickly. Many suppliers are part-time operations that lack robust quality control, suppliers' ever-changing production processes all but ensure that one batch of material differs from the next, and buyers and suppliers disagree over fundamental terminology. Standards from groups like the American National Standards Institute and the International Organization for Standardization could solve the problem, but they will require years of negotiation to develop. All told, it will take three years for competition to weed out ineffective suppliers and for agreed-upon standards to take shape, according to Lux Research.

"In the interim, nanomaterials buyers and suppliers have no choice but to act defensively," Nordan said. "Buyers should use secret shopping to qualify suppliers, requesting price and availability for large quantities – a kilogram for carbon nanotubes, for example – to weed out suppliers that can't actually deliver. In addition, they should clearly describe to suppliers how they plan to use the material to eliminate ambiguity, and enlist a procurement specialist to finalize T's and C's. On the other side of the table, suppliers must obsessively document each shipment using tools like scanning electron microscopy images, as well as educate customers on how to use the nanomaterial without contaminating or destroying it," he added.

Carlyle Group sells Sippican to Lockheed

Lockheed Martin Corporation has completed its acquisition of Sippican Holdings Inc, a Massachusetts-based supplier of naval electronics systems from the global private equity firm The Carlyle Group and management in December.

Sippican's expertise is in the development and production of surface ship countermeasures, anti-submarine warfare training and submarine communications systems, as well as meteorological and oceanographic instrumentation, which will enhance Lockheed Martin's global capabilities in naval warfare, unmanned underwater vehicles and low-cost manufacturing.

"The Sippican acquisition aligns with the corporation's cash deployment strategy of acquiring select, niche companies that enhance our core focus areas," said Lockheed Martin president and CEO, Bob Stevens.

"Sippican's diverse product portfolio, engineering and manufacturing expertise, and unique technologies will add a new set of innovative capabilities to the Lockheed Martin team. We look forward to expanding our capabilities and solutions to meet the demanding requirements of the US Navy and other customers."

AlGaAs diodes yield to GaN

Strategy Analytics' "*AlGaAs Laser Diode Markets: 2003-2008,*" predicts that the market for AlGaAs-based laser diodes will grind to a halt by 2008.

This will be due to a combination of lowering ASPs, CD player market maturity and the beginnings of a slowdown in the growth of DVD players and drives for PCs.

All of this will translate into a CAAGR of only 0.1 percent for the 2003-2008 timeframe.

Japanese manufacturers, including Sharp, Sanyo, Matsushita and Sony, accounted for 76% of the world's total supply of AlGaAs laser diodes in 2003, focused primarily on optical storage applications for CD and DVD drives.

However, these established vendors face increasing competition from Taiwanese and Chinese suppliers, placing even greater pressure on ASPs.

"The entry of Chinese and Taiwanese vendors into the major CD & DVD drive markets will further reduce prices," says Asif Anwar, director, GaAs Service.

"The Japanese are already beginning to switch their focus toward next-generation optical storage markets based on Gallium Nitride technology."

Strategy Analytics does see a continued need for next-generation optical storage drives to be backwards compatible.

While this will ensure continued demand for AlGaAs devices, ASPs will continue to be driven down.

Strategy Analytics report, "*Gallium Nitride Laser Diodes: Markets and Applications.*"

Web: www.strategyanalytics.com /gaas.html.